

LETTER TO THE EDITOR

Management of sterno-mediastinitis using titanium mesh following cardiac surgery

Dear Editor,
 We read with great interest the article entitled “Management of sterno-mediastinitis” by Ennker et al. in your journals last issue (1). Sterno-mediastinitis is rare but unfortunately lifethreatening complication following cardiac surgery worldwide. Various techniques have been used to decrease morbidity and mortality to date. Current treatment algorithm consist of early and agressive surgical debridement, antibiotics and vacuum assisted wound closure systems. Although this combined approach could provide encouraging results, additional reconstructive techniques must be used in patients with tissue loss or poor sternal bone quality. Reconstruction of the anterior chest wall with flap plasty has been used since early 80’s. Flap plasty techniques are generally an obligation rather than preference because of complex nature of procedure requiring advanced surgical skill and high complication rate. Nowadays, titanium mesh offer new and less invasive alternative in patiens who have anterior chest wall defect in consequence of surgical debridement of infected tissue. In our clinic we prefer agressive antibiotherapy in accordance with culture antibiogram, early and radical surgical debridement, titanium

mesh plasty, and vacuum assisted wound closure system in patients with wide chest wall defect including sternum.

Surgical technique. Following agressive debridement, and removal of all infected materials we evaluated lost tissue in anterior chest wall. Titanium mesh (Surgical Titanium Mesh™, DePuy AcroMed, Inc) was tailored in appropriate size and shape. Free margins of resected sternum were strengtened with no: 1 sternal wires. Titanium plate was mounted with an aid of bone screws to undamaged remnant sternum or costaes (*Figure 1*). Bilateral pectoral muscles were dissected and used to cover titanium plate. Skin incision was trimmed and closed with 3/0 prolene suture by matrix technique. Additionally, vacuum assisted incision management system (Prevena™ KCI Medical Products Ltd Wimborne, Dorset United Kingdom) was used for one week. Patient was discharged in well condition. The anterior chest wall was found stabil at the postoperative 3rd month control examination by computerized tomography (*Figures 2, 3*).

Limiting sternal motion between broken bone segments is one the most important principles for bone healing. In general practice, reinforcement of sternum with the Robiscek technique is preferred approach but may fail to achieve bone fixation particularly in cases who have significant bone resection. In this cases sternal stabilization with titanium mesh appears to be new alternative promising encouraging results (2-4).



Figure 1 - Peroperative view of titanium mesh plasty.



Figure 2 - Control computerized tomography shows successful stabilization of the sternum.

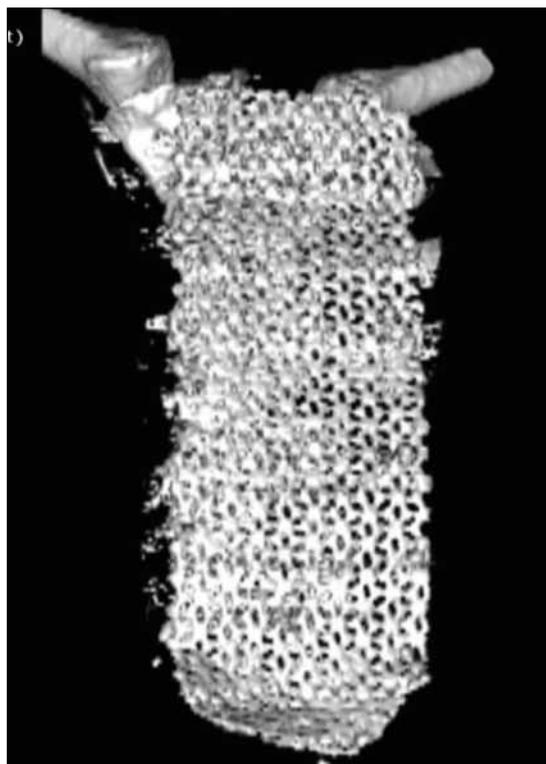


Figure 3 - Maximum intensity projection view of reconstructed sternum.

In conclusion, we want to emphasize that treatment of sternal dehiscence with titanium mesh may provide favorable outcomes. This technique should be kept in mind to repair sternum with poor bone quality and large defect.

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RESPONSE

Treatment of mediastinitis following cardiac surgery-still in discussion

Dear Editor,
it is a pleasure for me to comment on Doctor Gursoy's, Letter to the Editor.

Osteosynthesis, whichever method you chose (plates, screws, pins, compression systems and all the other orthopedic paraphernalia) have not shown superiority but add further trauma to the patient (1).

We do follow another approach. A therapeutic algorithm including debridement, vacuum assisted closure therapy and subsequent myoplastic reconstruction if necessary is recom-

mended (2-4). In our opinion it is important to get rid of all foreign material while the infection is still ongoing. Doctor Gursoy describes a radical debridement before performing the titanium plasty in combination with antibiotics and VAC Therapy meaning he operates in an area still contaminated where foreign material should be avoided.

In the presence of suitable local tissue, most of the sternal infections can be reconstructed with these. In the majority of cases with a bilateral M. pectoralis flap with or without desinsertation at the humerus (5). This is with no doubt a more beneficial procedure compared to synthetic material. The muscle plasty will guarantee a firm tissue layer and stable conditions. The complication rate concerning flap

plasties Dr. Gursoy mentioned is not high when performed by an experienced and skilled surgeon (2,5). It goes without saying that performing an osteosynthesis has its own complications. If an osteosynthesis is performed the pectoralis muscles have to be removed on both sides carefully to cover the devices.

So it should not be a problem to create a pectoralis plasty. It could be done in an interdisciplinary approach with a plastic surgeon. This cooperation is also applicable to procedures such as the omental- or latissimus dorsi flaps (2).

The literature Dr. Gursoy mentioned is not suitable to promote osteosynthesis:

1. Voss et al reports of one series of 6 patients in which a transverse plate fixation was used. In three patients the device had to be removed due respiratory discomfort, one patient died.
2. Sahin et al published a case report on this topic. No universal validity can be postulated.
3. Mitra et al did not use this system in cases of infection and mediastinitis, but in the primary closure of expected complicated sterna.

It might be an option in special individual cases, but surely not for the majority of patients

suffering from mediastinitis.

What is the experience of Doctor Gursoy with this technique described by him, how many patients did he operate on, what are his results and follow up?

Best wishes

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